

**Taminco Higher Amines Inc
Taminco Higher Amines Inc
St. Gabriel, Iberville Parish, Louisiana
Agency Interest Number: 3263**

**Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services**

STATEMENT OF BASIS

**Taminco Higher Amines Inc
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St. Gabriel, Iberville Parish, Louisiana
Agency Interest Number: 3263
Activity Number: PER20060013
Proposed Permit Number: 1280-00031-V4**

I. APPLICANT

Company:

Taminco Higher Amines Inc
PO Box 1
St Gabriel, Louisiana 70776-0001

Facility:

Taminco Higher Amines Inc
3790 Hwy 30
St. Gabriel, Iberville Parish, Louisiana
Approximate geographic coordinates are Latitude 30° 14' 52" and Longitude 91° 05' 09".

II. FACILITY AND CURRENT PERMIT STATUS

Taminco Higher Amines Inc – St Gabriel Plant is designed to manufacture higher alkylamines from ammonia and appropriate alcohols via two continuous process trains. Each train is divided into a reaction and distillation operation. In each reaction operation, the raw materials are vaporized, reacted in the gas phase over fixed beds of catalysts, and cooled to separate non-condensable by-products. In the distillation process, the desired amine product is separated from unreacted raw material and light and heavy by-products.

Taminco Higher Amines Inc is a designated Part 70 source that has only one title V permit for the entire facility.

| Permit No. | Unit or Source | Date Issued |
|---------------|-------------------|-------------|
| 1280-00031-V3 | St. Gabriel Plant | 1/16/2007 |

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III. PROPOSED PROJECT/PERMIT INFORMATION

Application

A permit application was submitted on November 22, 2006 requesting a Part 70 operating permit modification for the St. Gabriel Plant. The application was subsequently revised on February 16, 2007. Additional information dated January 17, 2007 was also submitted.

Project

Currently, monoisopropylamine is produced by reacting isopropanol and ammonia. Taminco wants to retro-fit the St. Gabriel site to allow the flexibility to purchase and use acetone as a raw material to produce isopropanol or to purchase isopropanol. Taminco is proposing to permit two options at this time with the intentions of modifying the permit to include only one of these options after determining which option better suits their needs.

Option 1 – Vapor Phase

Taminco is proposing to retro-fit their existing propyl's unit to allow for the use of acetone as a raw material in the production on monoisopropylamine. This project option involves making piping and pump additions around the existing TK-208 storage vessel which would allow pumping acetone from storage directly to the existing MIPA reactor process. Prior to introduction into the first reactor, an inline vaporizer will heat the acetone. This vaporizer makes use of existing heat, via a loop system, from the reactor and is not a combustion device. The only associated emissions with the inline vaporizer are fugitive emissions.

Initially, acetone will be introduced into the reactor with isopropanol. However, to achieve the desired 100% usage of acetone, the two existing MIPA reactors will be placed in series. Once the reactors are placed in series, another vaporizer with integrated loop system will be installed to feed the second reactor.

This project option will increase in secondary fuel flow to the boilers, but it will not result in an increase in boiler steam demand and there will be no changes to regulated VOC components at the low pressure absorbers. It is also important to note that this will not result in an increase in production capability of the facility.

The proposed modifications for this option are as follows:

- Revise boiler calculations to address the flowrate and composition of the isopropyl flow to the boiler. As a result, a minimal increase in NH_3 is proposed;
- Add another scenario to allow the storage of acetone to TK-202 Storage Tank (Source ID 5-76) in addition to the storage of denatured ethanol, ethanol, and isopropyl alcohol. Since acetone is not a VOC or LTAP, an emission increase is not proposed;
- Revise TK-208 Storage Tank (Source 6-76) calculations to allow for the storage of isopropyl alcohol and acetone in addition to the storage of diisopropylamine (DIPA). Since storage of DIPA is considered to be the worst case for emissions, an emissions increase is not proposed;
- Revise fugitive emissions (Source ID 13-76) to include additional components from vapor phase acetone project.

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Option 2 – Liquid Phase

Taminco is proposing to retro-fit the St. Gabriel site with a liquid phase acetone reactor system. Acetone will be converted to isopropanol via a liquid phase hydrogenation reactor. The acetone reactor will provide the site with the flexibility to either purchase acetone and convert it to isopropanol or to purchase isopropanol directly for use as a raw material.

The proposed modifications for this option are as follows:

- Revise cooling tower U-331 (7-96) calculations to increase flow rate from 9,600 gpm to 12,000 gpm.
- Revise proposed TK-500 SU/SD (1-06) calculations to include vents from liquid phase hydrogenation reaction.
- Revise low pressure absorber (40-96) calculations to include two new streams from the acetone process.
- Revise fugitive emissions (13-76) to include fugitives from acetone project.
- Include NSPS Subpart RRR regulatory applicability to vent streams associate with the acetone process reactor.

Proposed Permit

Permit 1280-00031-V4 will be the modification of Part 70 operating permit 1280-00031-V3 issued on January 16, 2007 for the St. Gabriel Plant.

A notice requesting public comment on the proposed permit was published in *The Advocate*, Baton Rouge, Louisiana, on MONTH XX, 200X; and *local paper*, St. Gabriel, Louisiana, on MONTH XX, 200X. The public notice was sent to persons included in the Office of Environmental Services Public Notice Mailing List on MONTH XX, 2006. The proposed permit was also submitted to US EPA Region VI. All comments will be considered prior to the final permit decision.

Permitted Air Emissions

Estimated emissions in tons per year (for both options combined) are as follows:

| Pollutant | Before | After | Change |
|------------------|--------|--------|--------|
| PM ₁₀ | 13.92 | 15.46 | +1.54 |
| SO ₂ | 0.48 | 0.48 | - |
| NO _x | 115.84 | 115.84 | - |
| CO | 3.32 | 3.32 | - |
| VOC | 62.80 | 69.56 | +6.76 |

Chapter 51 Toxic Air Pollutants (TAPs):

| <u>Pollutant</u> | <u>Before</u> | <u>After</u> | <u>Change</u> |
|------------------|---------------|--------------|---------------|
| Ammonia | 9.48 | 9.49 | +0.01 |
| Acetaldehyde | 0.21 | 0.21 | - |
| Chlorine | 0.01 | 0.014 | +0.004 |
| Ethylene Glycol | 0.70 | 0.70 | - |

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Chapter 51 Toxic Air Pollutants (TAPs):

| <u>Pollutant</u> | <u>Before</u> | <u>After</u> | <u>Change</u> |
|------------------|---------------|--------------|---------------|
| Ethylene Oxide | <0.01 | <0.01 | - |
| Sulfuric Acid | <0.001 | <0.01 | +<0.01 |
| Triethylamine | 3.94 | 3.94 | - |
| Total | 14.34 | 14.36 | +0.014 |

IV REGULATORY ANALYSIS

The applicability of the appropriate regulations is straightforward and provided in the Specific Requirements section of the proposed permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are also provided in the Specific Requirements section of the proposed permit.

Applicability and Exemptions of Selected Subject Items

See Proposed Permit.

Prevention of Significant Deterioration/Nonattainment Review

This permit was reviewed for compliance with 40 CFR 70, the Louisiana Air Quality Regulations and New Source Performance Standards (NSPS). National Emission Standards for Hazardous Air Pollutants (NESHAP) and Prevention of Significant Deterioration (PSD) do not apply.

Streamlined Equipment Leak Monitoring Program

None

MACT Requirements

None

Air Quality Analysis

Louisiana Toxic Air Pollutant (LTAP) dispersion modeling is performed for the applicable LTAP compounds with emissions above the Minimum Emission Rate. The screening modeling results predict the maximum ground level concentrations of toxic air pollutants are below the Ambient Air Standards (AAS).

Impact on air quality from the emissions of the proposed units will be below the National Ambient Air Quality Standards (NAAQS) and the Louisiana Ambient Air Standards (AAS) beyond industrial property.

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General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to the Section VIII – General Condition XVII Activities of the proposed permit.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to the Section IX – Insignificant Activities of the proposed permit.

V. PERMIT SHIELD

None

VI. PERIODIC MONITORING

See Specific Requirements

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VII. GLOSSARY

Carbon Monoxide (CO) – A colorless, odorless gas, which is an oxide of carbon.

Maximum Achievable Control Technology (MACT) – The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

Hydrogen Sulfide (H₂S) – A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the reaction of acids on metallic sulfides, and is an important chemical reagent.

New Source Review (NSR) – A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C ("Prevention of Significant Deterioration of Air Quality") and D ("Nonattainment New Source Review").

Nitrogen Oxides (NO_x) – Compounds whose molecules consist of nitrogen and oxygen.

Organic Compound – Any compound of carbon and another element. Examples: Methane (CH₄), Ethane (C₂H₆), Carbon Disulfide (CS₂)

Part 70 Operating Permit – Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥10 tons per year of any toxic air pollutant; ≥25 tons of total toxic air pollutants; and ≥100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM₁₀ – Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) – The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

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Sulfur Dioxide (SO₂) – An oxide of sulfur.

Sulfuric Acid (H₂SO₄) – A highly corrosive, dense oily liquid. It is a regulated toxic air pollutant under LAC 33:III.Chapter 51.

Title V Permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) – Any organic compound, which participates in atmospheric photochemical reactions; that is, any organic compound other than those, which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.